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THE AGARICACEAE OF TROPICAL NORTH AMERICA—VII

WILLIAM A. MURRILL

The last article of this series, concluding a partial treatment of the rusty-spored species, appeared in *Mycologia* for January, 1913. Since that time, the entire group of Pholiotanae has been taken up in *North American Flora,* volume 10, part 3, for the temperate as well as the tropical regions of North America. and the various rusty-spored genera have been treated in their proper order as far as *Inocybe,* which genus will, with *Pholiota, Cortinarius,* and *Locellina,* be considered in forthcoming parts of that work.

The next and last subtribe of the Agariceae is now to be considered, at least so far as our tropical species are concerned. The following key includes all the genera in this subtribe, some of which are not represented in tropical America, but another article will be required to complete the treatment of the species.

SUBTRIBE 4. AGARICANAE

- Hymenophore dimidiate, sessile or with short, lateral stipe. 1. MELANOTUS.
- Hymenophore circular, with central stipe.
  - Volva absent.
    - Lamellae not deliquescent.
      - Stipe slender, tubular, with a cartilaginous cortex; annulus absent except rarely in *Campanularius.*
        - Lamellae decurrent. 2. DECONICA.
        - Lamellae adnate or adnexed.
          - Margin of pileus at first straight and appressed to the stipe.
            - Spores purplish-brown or dark-fuscous. 3. ATYLOSPORA.
            - Spores black. 4. PSATHYRELLA.
          - Margin of pileus at first incurved.
            - Spores purplish-brown or dark-fuscous. 5. PSILOCYBE.

- Spores black. 6. CAMPANULARIUS.
- Stipe fleshy or fibrous, of uniform texture.
  - Veil absent, inconspicuous, or appendiculate, not forming an annulus.
    - Lamellae adnate or adnexed.
      - Hymenophore solitary or subcespitose, rarely densely cespitose; hygrophanous, viscid, or squamulose. 7. DROSOPHILA.
      - Hymenophore densely cespitose; surface firm, dry, glabrous. 8. HYPHOLOMA.
    - Lamellae free. 9. PILOSACE.
  - Veil conspicuous, forming an annulus.
    - Lamellae decurrent, waxy; veil glutinous; spores black. 10. GOMPHIDIUS.
    - Lamellae not as above.
      - Lamellae adnate or adnexed. 11. STROPHARIA.
      - Lamellae free. 12. AGARICUS.
- Lamellae deliquescent, melting to an inky fluid. 13. COPRINUS.
- Volva present. 14. CLARKEINDA.

1. MELANOTUS Pat. Tax. Hymén. 175. 1900

According to Patouillard, this genus corresponds to *Crepidotus,* of the rusty-spored series, but differs in having spores that are purplish-brown, with an apical pore.

Pileus about 1 cm. broad. 1. *M. musicola.*
Pileus 2–3 cm. broad. 2. *M. fumosifolius.*

1. **Melanotus musicola** (Berk. & Curt.)

Crepidotus musicola Sacc. Syll. Fung. **5**: 883. 1887.

Described from Wright's collections on dead plantain leaves in Cuba. Specimens from Guadeloupe and St. Vincent determined as *Crepidotus alveolus* at Kew may belong here or with *Melanotus fumosifolius.*

2. **Melanotus fumosifolius** (Murrill)

Crepidotus fumosifolius Murrill. N. Am. Flora **10**: 156. 1917.

Described from specimens collected by Earle on a dead log at Rose Hill, Jamaica. It is common also on dead banana leaves. The spores are broadly ovoid, smooth, decidedly purplish-brown, 5–7 × 3.5–5 μ.

Santiago de las Vegas, Cuba, *Earle 32, 48*; Utuado, Porto Rico, *Mrs. Britton & Miss Marble 1210*; Castleton Gardens, Jamaica, *Murrill 131*; Mooretown, Jamaica, *Murrill 137, 157*; Sir John Peak, Jamaica, *Murrill 798*; British Honduras, *Peck*; Jalapa, Mexico, *Murrill 97*; Orizaba, Mexico, *Murrill 850*; Motzorongo, Mexico, *Murrill 1060*; Xuchiles, Mexico, *Murrill 1129*.

2. DECONICA (W. G. Sm.) Sacc. Syll. Fung. **5**: 1058. 1887

This is a very small genus, separated from *Psilocybe* as a subgenus by W. G. Smith in 1870, because of its decurrent lamellae, and raised to generic rank by Saccardo in 1887. There are only two tropical North American species, both occurring on manure.

Pileus 2 cm. broad; spores 12 μ long.	1. *D. bullacea.*
Pileus 0.5 cm. broad; spores 7 μ long.	2. *D. scatigena.*

1. DECONICA BULLACEA (Bull.) Sacc. Syll. Fung. **5**: 1058. 1887
Agaricus bullaceus Bull. Herb. Fr. *pl. 566, f. 2*; hyponym. 1791; Pers. Syn. Fung. 412. 1801.

This species was first figured by Bulliard from specimens collected in France. While probably widely distributed, it has not often been reported from this country. The spores of excellent specimens collected in Jamaica are ovoid, smooth, opaque, umbrinous by transmitted light under the microscope, 11–12 × 6–8 μ. Authentic specimens from Bresadola agree in every particular. The following collections were all made on horse manure in pastures and roads.

Jalapa, Mexico, *W. A. & Edna L. Murrill 29*; Cordoba, Mexico, *W. A. & Edna L. Murrill 887*; Santiago de las Vegas, Cuba, *Earle 62, 84*; Halls Delight, Jamaica, *Earle 117*; Cinchona, Jamaica, *W. A. & Edna L. Murrill 508, 531*; Grenada, *Broadway*.

2. DECONICA SCATIGENA (Berk. & Curt.) Sacc. Syll. Fung. **5**: 1058. 1887

Agaricus scatigenus Berk. & Curt. Jour. Linn. Soc. **10**: 292. 1868.

Known only from Wright's collections in Cuba. The species, which has the same habitat as the previous one, may be distinguished by its smaller size and smaller spores, the latter being only 7 × 4 μ. It is just possible that this species is only a small, immature form of *D. bullacea,* but there is little chance of proving it. I have examined the spores of the type specimens and find them as represented.

3. ATYLOSPORA Fayod, Ann. Sci. Nat. VII. 9: 376. 1889

Psathyra Quél. Champ. Jura Vosg. 118. 1872. Not *Psathyra* Spreng. 1818. Not *Psathura* Commers. 1789.

Pluteopsis Fayod, Ann. Sci. Nat. VII. 9: 377. 1889.

This rather difficult genus, well represented both in temperate and tropical regions, is characterized by a cartilaginous stipe, a straight margin appressed when young, and the absence of a veil. It is difficult to distinguish in the herbarium from *Psilocybe* and *Drosophila*. *Psathyrella* differs in having black spores, but even here it is at times hard to draw the line.

Pileus white with blackish squamules, becoming smooth and purplish-brown with age.	1. *A. tigrina.*
Pileus not as above.	
Pileus 3–10 mm. broad.	
Stipe 5 mm. long; pileus avellaneous.	2. *A. diminutiva.*
Stipe 1–2 cm. long.	
Pileus whitish.	3. *A. commiscibilis.*
Pileus yellow.	4. *A. epibates.*
Pileus red.	5. *A. lateritia.*
Pileus pinkish-gray.	6. *A. byssina.*
Pileus pale-umbrinous.	7. *A. euthugramma.*
Pileus 1–2 cm. broad.	
Pileus white when moist, fulvous or umbrinous when dry.	
Stipe about 1 cm. long.	8. *A. coprinoceps.*
Stipe reaching 4 cm. long.	9. *A. Musae.*
Pileus uniformly avellaneous-isabelline.	10. *A. mexicana.*
Pileus pale-avellaneous, isabelline on the disk.	11. *A. albipes.*
Pileus sordid-luteous.	12. *A. bulbillosa.*
Pileus pale-fulvous with a peculiar sheen.	13. *A. pallidispora.*
Pileus bay, chestnut, or brown.	
Pileus not umbonate, slightly depressed.	14. *A. cubensis.*
Pileus umbonate.	
Surface decorated with white scales.	15. *A. plumigera.*
Surface glabrous.	

Surface not striate; stipe 1.5 cm. long. 16. *A. mammillata.*
Surface distinctly striate; stipe 3 cm. long. 17. *A. cinchonensis.*
Pileus 2–3 cm. broad.
Pileus pallid with purplish tints. 18. *A. Roystoniae.*
Pileus avellaneous-isabelline. 19. *A. plana.*
Pileus fulvous. 20. *A. pseudotenera.*
Pileus fuliginous. 21. *A. fuliginosa.*

1. **Atylospora tigrina** (Pat.)

Psathyra tigrina Pat. Bull. Soc. Myc. Fr. **15**: 197. 1899.

Known only from specimens collected by Duss on rotten stumps at Basse-Terre, Guadeloupe. It has many characters in common with *Coprinus,* but the spores are purplish-brown.

2. **Atylospora diminutiva** sp. nov.

Pileus hemispheric to broadly convex, with a small umbo, not expanding, scattered, 6 mm. broad and 2 mm. thick; surface striate, uniformly avellaneous, glabrous; margin straight, entire, concolorous; lamellae adnate, ventricose, distant, umbrinous to fuliginous, paler and entire on the edges; spores broadly lemon-shaped, smooth, subopaque, uniguttulate, purplish-brown under the microscope, about 5 × 4 μ; stipe curved, equal, slightly roughened, umbrinous, 5 mm. long, 0.5 mm. thick.

Type collected on a dead fallen stick at Cinchona, Jamaica, 1,500 m. elevation, December 25–January 8, 1908–9, *W. A. & Edna L. Murrill 463* (herb. N. Y. Bot. Gard.).

3. **Atylospora commiscibilis** (Berk.)

Agaricus commiscibilis Berk. in Warming, Vidensk. Meddel. **1879–80**: 33. 1879.

Psathyra commiscibilis (Berk.) Sacc. Syll. Fung. **5**: 1068. 1887.

Described from specimens collected at Rio de Janeiro. Brazil, by Glaziou, and also found in St. Thomas. The species greatly resembles *Psathyrella minutula* in general appearance, but is distinguished by its spores, which are ovoid to ellipsoid, smooth, purplish-brown under the microscope, 7–8 × 4–5 μ.

4. **Atylospora epibates** (Fries)

Agaricus epibates Fries, Nova Acta Soc. Sci. Upsal. III. **1**: 26. 1851.

Psathyra epibates (Fries) Sacc. Syll. Fung. **5**: 1070. 1887.

Known only from specimens collected by Oersted on decayed wood in Naranjo, Costa Rica. This is a minute species resembling *Prunulus,* the slender stipe being orbicular at the base and appressed to the matrix. There is a good colored figure at Copenhagen, but no specimens have been found.

5. **Atylospora lateritia** sp. nov.

Pileus hemispheric to broadly convex, not expanding, solitary, 8 mm. broad, 3 mm. thick; surface smooth, glabrous, striate, dull-latericious, pale-testaceous on the disk; margin straight, entire, whitish; lamellae adnexed, rather broad, distant, pale-chestnut, entire and somewhat paler on the edges; spores ovoid or ellipsoid, smooth, usually 2-guttulate, purplish-brown, about $9 \times 5\,\mu$; stipe equal or slightly tapering upward, concolorous below, paler above, smooth, glabrous, 2 cm. long, 1–1.5 mm. thick.

Type collected among moss on a clay bank at Cinchona, Jamaica, December 25–January 8, 1908–9, *W. A. & Edna L. Murrill 471* (herb. N. Y. Bot. Gard.)

6. **Atylospora byssina** sp. nov.

Pileus strongly convex to plane, thin, fragile, not umbonate, gregarious, 5–10 mm. broad; surface varying from pinkish-gray to brown tinged with pink, glabrous, nearly smooth; margin entire, concolorous; lamellae adnate, crowded, rather broad, becoming dark-purplish-brown or almost black; spores ellipsoid, rounded at both ends, smooth, very pale purplish-brown under the microscope, $7\text{–}8 \times 4\text{–}5\,\mu$; stipe filiform, pallid or rosy-isabelline, smooth, glabrous, about 1.5 cm. long, less than 1 mm. thick, attached to the substratum by a very conspicuous, radiating mass of tomentum, which is evidently white when fresh, but slightly yellowish in dried specimens.

Type collected on a dead log in open woods at Rio Piedras, Porto Rico, December 1, 1915, *Bruce Fink 481* (herb. N. Y. Bot. Gard.). Also collected in the same locality on dead logs in

April and June, 1912, *J. R. Johnston 330, 420.* This species resembles *A. mexicana* and also species of *Coprinus.* Many of the pilei have deliquesced or otherwise disappeared, leaving only the stipes and the cottony patches of mycelium.

7. **Atylospora euthugramma** (Berk. & Curt.)

Agaricus euthugrammus Berk. & Curt. Jour. Linn. Soc. **10**: 290. 1868.

Naucoria euthugramma Sacc. Syll. Fung. **5**: 835. 1887.

Known only from minute specimens collected on decayed wood in Cuba by Wright. It is said by the author to have the habit of *Agaricus disseminatus* but to have spores quite different in color and size. I find them to be broadly ellipsoid, smooth, pale-purplish-brown under the microscope, 5 × 4 μ.

8. **Atylospora coprinoceps** (Berk. & Curt.)

Agaricus coprinoceps Berk. & Curt. Jour. Linn. Soc. **10**: 290. 1868.

Naucoria coprinoceps (Berk & Curt.) Sacc. Syll. Fung. **5**: 835. 1887.

Known only from specimens collected by Wright on logs in Cuba. The spores are too dark for *Naucoria.*

9. **Atylospora Musae** (Earle)

Gymnochilus Musae Earle, Inf. An. Estac. Centr. Agron. Cuba **1**: 239. 1906.

This species occurs on fallen dead stems and leaves of banana trees in Cuba, where it was found and described by Earle. Although very near to species of *Drosophila,* it seems to me to belong rather in *Atylospora.* The stipe is very slender, only 2 mm. thick, and the spores are ellipsoid or ovoid, smooth, 2-guttulate, nearly opaque, decidedly purplish-brown under the microscope, 6–8 × 4–5 μ.

10. **Atylospora mexicana** Murrill, sp. nov.

Pileus convex, not umbonate, not fully expanding, gregarious to subcespitose, 1 cm. broad; surface glabrous, smooth, sometimes pitted or reticulate-rugose in dried specimens, uniformly avellaneous-isabelline; margin paler, thin, entire, not incurved, but deflexed and appressed when young; lamellae adnate, arcuate, broad, rather crowded, white to pale-avellaneous and finally purplish-brown with white edges; spores ellipsoid, rounded at both ends, smooth, pale-purplish-brown with a yellowish tint under the microscope, 7 × 3.5–4.5 μ; stipe curved, tapering upward, white, smooth and glabrous above, with abundant cottony tomentum at and near the base, 1.5 cm. long, 2 mm. thick.

Type collected on dead wood in a moist, virgin forest at Motzorongo, near Cordoba, Mexico, January 15, 1910, *W. A. & Edna L. Murrill 1073* (herb. N. Y. Bot. Gard.).

11. **Atylospora albipes** sp. nov.

Pileus convex, not umbonate, scattered, 1 cm. broad; surface striate, finely asperulate, pale-avellaneous, isabelline on the disk; margin straight, entire, concolorous; lamellae adnate, rather broad, crowded, white to pinkish, at length discolored; spores ellipsoid, smooth, decidedly purplish-brown under the microscope, about 7–8 × 4–5 μ; stipe very slender, subcartilaginous, equal, white, shining, hollow, 2–3 cm. long, 1–2 mm. thick.

Type collected on a decayed banana stalk in a ravine east of Hope Gardens, Jamaica, 240 m. elevation, December 12, 1908, *W. A. & Edna L. Murrill 22* (herb. N. Y. Bot. Gard.).

12. **Atylospora bulbillosa** (Fries)

Agaricus bulbillosus Fries, Nova Acta Soc. Sci. Upsal. III. **1**: 26. 1851.

Psathyra bulbillosa (Fries) Sacc. Syll. Fung. **5**: 1065. 1887.

Known only from specimens collected by Oersted on the ground near Cartago, Costa Rica. The name refers to the enlarged, bulbous base of the stipe. There is a good colored figure at Copenhagen, but no specimens have been found.

13. **Atylospora pallidispora** sp. nov.

Pileus convex to subexpanded, with a short, cuspidate umbo, scattered, 1 cm. broad; surface finely tomentose, not striate, pale-fulvous with a peculiar sheen; lamellae adnate, rather crowded, broad behind, latericeous-fulvous, entire and pallid on the edges;

spores broadly ellipsoid or ovoid, smooth, very pale-purplish-brown with a yellowish tint under the microscope, 5–6 × 3.5–4 μ; stipe cylindric, equal, cartilaginous, concolorous above, darker below, finely fibrillose-lacerate, 1.3 cm. long, 1 mm. thick.

Type collected on a dead fallen stick at Cinchona, Jamaica, 1,500 m. elevation, December 25–January 8, 1908–9, *W. A. & Edna L. Murrill 666* (herb. N. Y. Bot. Gard.).

14. **Atylospora cubensis** sp. nov.

Pileus thin, delicate, convex to expanded and slightly depressed, 1–1.5 cm. broad; surface glabrous, hygrophanous, pale-chestnut, paler when dry; margin faintly striate, concolorous; lamellae adnexed, crowded, subventricose, pallid to purplish-brown, entire and concolorous on the edges; spores ellipsoid, smooth, pale-purplish-brown under the microscope, 7 × 4–5 μ; stipe cylindric, white, shining, glabrous, hollow, 3 cm. long, 1–2 mm. thick.

Type collected by Mrs. C. F. Baker along paths at Santiago de las Vegas, Cuba, July 31, 1904, *F. S. Earle 138* (herb. N. Y. Bot. Gard.).

15. **Atylospora plumigera** (Berk. & Curt.)

Agaricus plumiger Berk. & Curt. Jour. Linn. Soc. **10**: 292. 1868.
Psathyra plumigera (Berk. & Curt.) Sacc. Syll. Fung. **5**: 1069. 1887.

Known only from Wright's collections on dead sticks in woods in Cuba. The spores are distinctly ovoid, smooth, pale-purplish-brown, about 8 × 5 μ.

16. **Atylospora mammillata** sp. nov.

Pileus conic to campanulate with a very prominent, conic umbo, not expanding, solitary, 1 cm. broad and 5 mm. high; surface glabrous, hygrophanous, not striate, fulvous-badious, fulvous on the umbo; margin dentate, spreading, paler; lamellae adnexed, ascending, narrow behind and very broad and ventricose in front, subcrowded, umbrinous, concolorous and entire on the edges; spores pyriform or strongly ovoid, tapering at one end, sometimes almost turbinate, smooth, clear-purplish-melleous under the microscope, 5–7 × 4–5 μ; stipe cylindric, equal, short, concolorous, whitish-pulverulent at the apex, 1.5 cm. long, 2 mm. thick.

Type collected in soil on a dry bank at Cinchona, Jamaica, 1,500 m. elevation, December 25–January 8, 1908–9, *W. A. & Edna L. Murrill 608* (herb. N. Y. Bot. Gard.).

17. **Atylospora cinchonensis** sp. nov.

Pileus conic to campanulate, not expanding, rather thin, fleshy, with a prominent, conic umbo, 1.5 cm. broad and high; surface distinctly striate to the umbo, subglabrous, hygrophanous, umbrinous to fuliginous, fulvous on the umbo; margin straight, entire, concolorous; lamellae broad, ventricose, distant, fuliginous, concolorous and entire on the edges; spores broadly and distinctly ovoid, smooth, pale-purplish-brown under the microscope, about 5×3.5–$4\,\mu$; stipe curved, equal, smooth, glabrous, fulvous, pallid near the base, 3 cm. long, 1–2 mm. thick.

Type collected among moss in clay soil on a shaded bank at Cinchona, Jamaica, 1,500 m. elevation, December 25–January 8, 1908–9, *W. A. & Edna L. Murrill 575* (herb. N. Y. Bot. Gard.).

18. **Atylospora Roystoniae** (Earle)

Gymnochilus Roystoniae Earle, Inf. An. Estac. Centr. Agron. Cuba 1:239. 1906.

Described from specimens collected by Earle on decaying logs of the royal palm near Managua, Cuba. Specimens collected by the writer in southern Mexico greatly resemble the types of this species and may not be distinct.

19. **Atylospora plana** sp. nov.

Pileus thin, delicate, expanded, almost perfectly plane, solitary, 2 cm. broad; surface striate, glabrous, avellaneous-isabelline, becoming isabelline when dry; margin concolorous, subentire, upturned on drying; lamellae adnate, narrow, crowded, becoming purplish-brown, whitish on the edges; spores ellipsoid, rounded at both ends, smooth, pale-purplish-brown with a yellowish tint under the microscope, indistinctly 2-guttulate, $7 \times 3.5\,\mu$; stipe slender, equal, smooth, glabrous, snow-white, yellowish in dried specimens, 3 cm. long, 2 mm. thick.

Type collected on dead wood at Cinchona, Jamaica, 1,500 m. elevation, December 25–January 8, 1908–9, *W. A. & Edna L. Murrill 624* (herb. N. Y. Bot. Gard.). This species is near the boundary line between *Atylospora* and *Drosophila*.

20. **Atylospora pseudotenera** (Fries)

Agaricus pseudotener Fries, Nova Acta Soc. Sci. Upsal. III. **1**: 26. 1851.

Psathyra pseudotenera (Fries) Sacc. Syll. Fung. **5**: 1065. 1887.

Known only from specimens collected by Oersted at Naranjo, Costa Rica. The species resembles *Galerula tenera.* There is a good colored figure at Copenhagen, but no specimens have been found.

21. **Atylospora fuliginosa** sp. nov.

Pileus hemispheric, not expanding, not umbonate, gregarious, 2 cm. broad and 1 cm. high; surface smooth, glabrous, hygrophanous, slightly striate, uniformly fuliginous, becoming somewhat paler on the disk; margin straight, eroded, concolorous; lamellae adnate, broad, ventricose, subcrowded, fuliginous, entire on the edges; spores usually ovoid, tapering at one end, smooth, purplish-brown, 7 × 4–5 μ; stipe equal or somewhat larger below, slender, smooth, glabrous, concolorous, whitish toward the base, 4–5 cm. long, 1.5–2 mm. thick.

Type collected in damp soil at Morce's Gap, near Cinchona, Jamaica, 1,500 m. elevation, December 29, 30, January 2, 1908–9, *W. A. & Edna L. Murrill 748* (herb. N. Y. Bot. Gard.). Also collected at the same time and place, *W. A. & Edna L. Murrill 680.*

4. PSATHYRELLA (Fries) Quél. Champ. Jura Vosg. 122. 1872

Agaricus § *Psathyrella* Fries, Epicr. Myc. 237. 1838.

Characterized by black spores and a straight, appressed margin when young. It is best known, perhaps, through its interesting little representative, *Psathyrella minutula,* which is widely distributed. A number of temperate species belong to this genus.

Pileus small, 2 cm. or less broad.	
Pileus white or gray.	
Spores tapering at the ends.	1. *P. minutula.*
Spores rounded at the ends.	2. *P. grisea.*
Pileus avellaneous.	
Pileus conic; solitary.	3. *P. mexicana.*
Pileus convex; cespitose.	4. *P. Earlei.*
Pileus reddish-brown to pale-rosy-isabelline.	5. *P. cubensis.*
Pileus large, 4–7 cm. broad.	6. *P. Stevensonii.*

1. **Psathyrella minutula** (Schaeff.)

Agaricus minutulus Schaeff. Fung. Bavar. 4: Ind. 72. 1774.
Agaricus disseminatus Pers. Syn. Fung. 403. 1801.
Psathyrella disseminata Quél. Champ. Jura Vosg. 123. 1872.

This very attractive little species was first described from Bavaria and accurately figured in color by Schaeffer. The synonymy is considerably complicated but it seems quite certain that the specific name under which the plant is best known has been in use since 1801, when Persoon extended his former use of this name to include the juvenile form as figured by Schaeffer in his plate 308.

The species appears to be cosmopolitan, or at least very widely distributed on decayed wood and moist earth containing organic matter, the caps often occurring in such large numbers in one spot that it would seem impossible to count them. *Psathyrella prona* is a European species somewhat similar in appearance but with much larger spores.

Xuchiles, near Cordoba, Mexico, *W. A. & Edna L. Murrill 1159*; Sumidero, Cuba, *Shafer 13913*.

2. **Psathyrella grisea** sp. nov.

Pileus very thin, small, conic to campanulate, not expanding, gregarious to subcespitose, 5–10 mm. broad and high; surface griseous, minutely whitish-floccose to subglabrous, distinctly striate to the disk; margin thin, concolorous, becoming irregular or splitting with age, incurved on drying; lamellae adnate, rather distant, very thin and fragile, becoming blackish with age; spores ellipsoid, rounded at both ends, smooth, dark-purplish-brown under the microscope, 7–8.5 × 3.5–4.5 μ; stipe filiform, slightly increasing toward the base, smooth, white, glabrous, 2–3 cm. long, 1 mm. or less thick.

Type collected on fallen dead sticks at Motzorongo, near Cordoba, Mexico, January 15, 1910, *W. A. & Edna L. Murrill 1077* (herb. N. Y. Bot. Gard.). A dainty little plant, reminding one of *Psathyrella minutula* and certain species of *Coprinus*. My field notes state that the pileus soon deliquesces.

3. **Psathyrella mexicana** sp. nov.

Pileus conic, not expanding, solitary, 1 cm. broad and high; surface hygrophanous, glabrous, rugose-striate, avellaneous, pale-isabelline on the disk; margin straight, entire, concolorous; lamellae adnate, crowded, rather broad, grayish-white at first, becoming black with age; spores ellipsoid, smooth, opaque, dark-purplish-brown under the microscope, black in mass, 12 × 7 μ; stipe rather fragile, filiform, smooth, snow-white, mycelioid at the base, 4 cm. long, 1 mm. thick.

Type collected in humus in a moist, virgin forest at Motzorongo, near Cordoba, Mexico, January 15, 1910, *W. A. & Edna L. Murrill 1066* (herb. N. Y. Bot. Gard.).

4. **Psathyrella Earlei** sp. nov.

Pileus membranous, not deliquescent, convex, obtuse, cespitose, 1–2 cm. broad; surface hygrophanous, glabrous, crustose-rugose, grayish-brown, somewhat darker on the disk, paler when dry; margin concolorous, striate, not splitting on the backs of the lamellae, which are adnate, crowded, rather broad, avellaneous to blackish; spores broadly ellipsoid, smooth, opaque, dark-brown under the microscope, black in mass, 10–12 × 8–9 μ; stipe slender, equal, tubular, glabrous, minutely pubescent at the apex, white with a brownish tint, cartilaginous, 5–7 cm. long, 1–1.5 mm. thick.

Type collected on buried wood in a banana field at Santiago de las Vegas, Cuba, June 18, 1904, *F. S. Earle 96* (herb. N. Y. Bot. Gard.).

5. **Psathyrella cubensis** sp. nov.

Pileus thin, campanulate to expanded, sometimes upturned at the margin with age, gregarious, 1–1.5 cm. broad; surface glabrous, hygrophanous, sometimes rugose, reddish-brown to pale-rosy-isabelline; margin concolorous, striate, becoming irregular or fluted; lamellae adnate or adnexed, broad, ventricose, rather crowded, at first pallid, becoming dark-purplish-brown or almost black; spores very broadly ellipsoid, opaque, uniguttulate, chestnut-colored under the microscope, black in mass, 9–12 × 7–8 μ; stipe filiform, glabrous, smooth, white and farinaceous at the apex, reddish below, 3–5 cm. long, 1 mm. thick.

Type collected in clay soil in a banana field at Santiago de las Vegas, Cuba, June 18, 1904, *F. S. Earle 98* (herb. N. Y. Bot. Gard.). Also collected by Van Herman in the same locality, September 8, 1904, *F. S. Earle 172*.

6. **Psathyrella Stevensonii** sp. nov.

Pileus conic or campanulate to convex and finally expanding, more or less umbonate, gregarious to subcespitose, 4–7 cm. broad; surface hygrophanous, distinctly sulcate-striate to the disk, brown or chestnut at first, fading to cinereous or isabelline, covered with prominent, white, floccose scales when young, at length glabrous; margin appressed when young, splitting with age; context with mild flavor and pungent, rather pleasant odor; lamellae adnexed, crowded, rather narrow, pallid to almost black, not deliquescing; spores ellipsoid, smooth, opaque, dark-chestnut under the microscope, black in mass, about $11 \times 6\,\mu$; stipe tapering upward, white, shining, hollow, glabrous or whitish-floccose, 7–10 cm. long, 3–8 mm. thick; veil white, scanty, soon evanescent.

Type collected in garden soil at Rio Piedras, Porto Rico, June, 1915, *J. A. Stevenson 2785* (herb. N. Y. Bot. Gard.). Also collected in chip dirt in a yard at Herradura, Cuba, October 10, 1906, *F. S. Earle 546,* and in a door-yard at the same place, November 3, 1906, *F. S. Earle 558.* This plant is rather large and the stipe rather thick for *Psathyrella,* but it cannot go into *Coprinus* because the lamellae do not deliquesce. This character was carefully noted by Stevenson. At first sight, one is reminded of *Coprinus micaceus,* which is smaller, more clustered, and has much smaller spores. Cooke's figure of *Psathyrella arata* represents the form of the plant fairly well.

DOUBTFUL SPECIES

Psathyrella hiascens (Fries) Quél. Champ. Jura Vosg. 123. 1872. (*Agaricus hiascens* Fries, Syst. Myc. 1: 303. 1821.) Described from specimens collected on the ground in humid woods in Europe and reported by Peck from New York. Specimens collected in Costa Rica by Oersted were referred to this species by Fries, but it is very probable that they are distinct. Oersted's figures represent a densely cespitose plant with hemispheric pileus, totally different from the campanulate, umbonate pileus shown in Bulliard's and Cooke's figures. Unfortunately, there are no specimens extant from which spores might be obtained. This species was also reported from Dominica by Miss A. L. Smith, but I have not seen the specimens.

Psathyrella modesta (Berk.) Sacc. Syll. Fung. **5**: 1133. 1887. (*Agaricus modestus* Berk. Lond. Jour. Bot. **1**: 453. 1842.) Described from specimens collected by Hinds on stumps in New Guinea. Reported from St. Vincent by Massee in 1892. I have not examined Massee's specimens.

5. PSILOCYBE (Fries) Quél. Champ. Jura Vosg. 116. 1872

Agaricus § *Psilocybe* Fries, Syst. Myc. **1**: 289. 1821.

This difficult genus differs from *Atylospora* in having the margin of the pileus incurved when young, and from *Campanularius* in having purplish-brown instead of black spores. It is well represented in temperate regions.

Pileus white, becoming brown; stipe white to fulvous.	1. *P. palmigena.*
Pileus rosy-isabelline; stipe subconcolorous.	2. *P. orizabensis.*
Pileus fulvous; stipe white.	3. *P. dichroma.*
Pileus brown; stipe concolorous.	4. *P. plutonia.*

1. PSILOCYBE PALMIGENA (Berk. & Curt.) Sacc. Syll. Fung. 5: 1049. 1887

Agaricus palmigena Berk. & Curt. Jour. Linn. Soc. **10**: 292. 1868.

Collected only once by Wright on palm stumps in woods in Cuba. The spores are ellipsoid or ovoid, smooth, distinctly purplish-brown under the microscope, 7 × 4–5 μ. The lamellae are described as free, while the type specimens are too poorly preserved to show their attachment.

2. **Psilocybe orizabensis** sp. nov.

Pileus conic, not expanding, not umbonate, solitary, 1.5 cm. broad and high; surface smooth, glabrous, not striate, uniformly rosy-isabelline; margin entire, concolorous; lamellae adnate, crowded, broad, whitish at first, becoming dark-isabelline with a rosy tint; spores oblong-ellipsoid, smooth, opaque, dark-chestnut under the microscope, about 12 × 6 μ; stipe slightly larger below, smooth, glabrous, paler than the pileus, rather brittle, 5 cm. long, 1.5–2 mm. thick.

Type collected in soil at Orizaba, Mexico, 1,200 m. elevation, January 10–14, 1910, *W. A. & Edna L. Murrill 771* (herb. N. Y. Bot. Gard.).

3. PSILOCYBE DICHROMA (Berk. & Curt.) Sacc. Syll. Fung. **5**: 1057. 1887

Agaricus dichromus Berk. & Curt. Jour. Linn. Soc. **10**: 292. 1868.

Known only from specimens collected by Wright on dead wood in Cuba. The spores are broadly ovoid, smooth, opaque, distinctly purplish-brown under the microscope, 7 × 4–5 μ.

4. PSILOCYBE PLUTONIA (Berk. & Curt.) Sacc. Syll. Fung. **5**: 1056. 1887

Agaricus plutonius Berk. & Curt. Jour. Linn. Soc. **10**: 292. 1868.

Known only from Wright's single collection on decayed wood in Cuba. The spores were described as subglobose, but are now distinctly angular, as in *Entoloma,* decidedly purplish-brown under the microscope, uniguttulate, 4 μ in diameter. If this angularity is not due to shrinkage, the species is readily distinguished by it and is quite anomalous. *Psathyra cubispora,* which occurs on moist ground in South America, may be referred to in this connection.

DOUBTFUL SPECIES

Psilocybe subviridis (Berk. & Curt.) Sacc. Syll. Fung. **5**: 1051. 1887. (*Agaricus subviridis* Berk. & Curt. Jour. Linn. Soc. **10**: 292. 1868.) Described from specimens collected by Wright on decayed wood in Cuba. The types at Kew are rather poor and the description omits many important characters, such as taste, and the color of the context and lamellae; but the spores are ellipsoid or ovoid, smooth, very pale purplish-brown with a yellowish tint under the microscope, 7 × 4 μ.

6. CAMPANULARIUS Roussel, Fl. Calvados ed. 2. 64. 1806

Agaricus § *Panaeolus* Fries, Epicr. Myc. 234. 1838.
Panaeolus Quél. Champ. Jura Vosg. 121. 1872.
Anellaria P. Karst. Bidr. Finl. Nat. Folk **32**: 517. 1879.
Chalymota P. Karst. Bidr. Finl. Nat. Folk **32**: 518. 1879.

This genus, which is better known as *Panaeolus,* is characterized by its black, usually lemon-shaped, spores, cartilaginous stipe, incurved margin, and non-deliquescent lamellae. The species generally occur on manure and are therefore very widely distributed, both in temperate and tropical regions, although the genus is not a large one.

Stipe reddish-brown, hollow, 2–4 mm. thick.	1. *C. campanulatus.*
Stipe white, solid, 4–8 mm. thick.	2. *C. solidipes.*
Stipe stramineous, only 4 cm. long.	3. *C. anomalus.*

1. CAMPANULARIUS CAMPANULATUS (L.) Earle, Bull. N. Y. Bot. Gard. 5: 434. 1909

Agaricus campanulatus L. Sp. Pl. 1175. 1753.

Agaricus papilionaceus Bull. Herb. Fr. *pl. 561, f. 2*; hyponym. 1791; Pers. Syn. Fung. 410. 1801.

Panaeolus campanulatus Quél. Champ. Jura Vosg. **1**: 122. 1872.

This species is common and widely distributed on manure or manured ground throughout temperate and tropical America, as well as Europe. The spores are like those of *C. solidipes,* but smaller.

Bermuda, *Brown, Britton, & Seaver 1307, 1346, 1458, 1477, 1517*; Bahamas, *Britton & Millspaugh 2503*; Cuba, *Wright;* Santiago de las Vegas, Cuba, *Earle 34*; Rio Piedras, Porto Rico, *Fink 550*; Cockpit Country, Jamaica, *Murrill & Harris 1072*; Guadeloupe, *Duss;* Grenada, *Broadway;* British Honduras, *Peck;* Jalapa, Mexico, *Murrill 108, 151, 177.*

2. **Campanularius solidipes** (Peck)

Agaricus solidipes Peck, Ann. Rep. N. Y. State Cab. **23**: 101. 1872.

Panaeolus solidipes Sacc. Syll. Fung. **5**: 1123. 1887.

This species was described from specimens collected at West Albany, New York. It is the largest and commonest species of this genus in tropical America, occurring on horse manure in pastures or along roadways. The spores are lemon-shaped, smooth, black, opaque, about 17 × 12 μ. Several species seem to have been confused with this by the older mycologists.

Santiago de las Vegas, Cuba, *Earle 22, 158*; Hope Gardens, Jamaica, *Earle 199, 326*; Cinchona, Jamaica, *Underwood 3173*;

Stanmore Hill, Jamaica, *Mrs. Britton, 468*; Halls Delight, Jamaica, *Earle 113*; Utuado, Porto Rico, *Britton & Cowell 1239*; Mayagüez, Porto Rico, *Fink 919*; Aibonito, Porto Rico, *Fink 1979*; Grenada, *Broadway.*

3. **Campanularius anomalus** sp. nov.

Pileus convex, not fully expanding, the entire hymenophore becoming caesious to ardesiacous when bruised, gregarious, 2 cm. broad; surface smooth, uniformly stramineous, the cuticle cracking with age; margin entire, concolorous, inflexed when young; context white, rather thick; lamellae adnate or adnexed, broad, subcrowded, soon becoming black; spores lemon-shaped, smooth, opaque, perfectly black under the microscope, $10–12 \times 9\,\mu$; stipe cylindric, equal, rather short, smooth, concolorous, hollow, 4 cm. long, 2.5 mm. thick; veil wanting.

Type collected among grass in a rich pasture in Troy, Cockpit Country, Jamaica, 800 m. elevation, January 12–14, 1909, *W. A. Murrill & W. Harris 1082.* This species differs decidedly from other members of the genus, but there seems to be no other place for it.

DOUBTFUL SPECIES

Panaeolus fimicola (Fries) Quél. Champ. Jura Vosg. **1**: 239. 1872. (*Agaricus fimicola* Fries, Syst. Myc. **1**: 301. 1821.) Reported from Guadeloupe and Martinique by Duss, but possibly confused with *C. solidipes.*

Panaeolus papilionaceus (Fries) Quél. Champ. Jura Vosg. **1**: 122. 1872. (*Agaricus papilionaceus* Fries, Epicr. Myc. 236. 1838. Not *A. papilionaceus* Pers. Syn. Fung. 410. 1801.) Described from specimens collected in Europe. Reported from Bermuda and St. Vincent, but possibly confused with *C. campanulatus* or *C. solidipes.*

Panaeolus phalenarum (Fries) Quél. Champ. Jura Vosg. **1**: 121. 1872. (*Agaricus phalenarum* Fries, Epicr. Myc. 235. 1838.) Reported from Cuba and St. Thomas, but possibly confused with *C. solidipes.*

Psilocybe antillarum (Fries) Sacc. Syll. Fung. **5**: 1052. 1887. (*Agaricus antillarum* Fries, Elench. Fung. **1**: 42. 1828.) Described from specimens collected among straw on the island of St. Croix, Danish West Indies. Specimens collected later on the same island by Oersted were referred to this species by Fries as variety *praelonga;* and the figure of this variety at Copenhagen, drawn by Oersted, is the only thing I have found outside of the description to throw light upon the species.

The figure reminds me very forcibly of *Paneolus solidipes* Peck. The description of the species refers to the solid stipe and to the fact that the pileus sometimes becomes areolate-corrugate, but the surface is said to be yellow or white in alcohol, while the drawing of the variety shows it to be avellaneous, and in *P. solidipes* it is white. Fries evidently put his species in the genus *Psilocybe* because of the "livid-black" lamellae, although he described the spores as black. If type specimens were available, the spores could be examined and the whole question settled.

Psilocybe fortunata (Cooke) Sacc. Syll. Fung. **5**: 1056. 1887. (*Agaricus fortunatus Cooke, Grevillea* 9: 100. 1881.) Described from specimens collected on the ground at Rio de Janiero, Brazil, by Glaziou, and reported from St. Vincent by Massee, who may have confused it with *C. solidipes,* the spores of the two being the same. Unfortunately, the color of *P. fortunata* is not given.

New Combinations

For the convenience of those who prefer the older nomenclature, the following species described as new in *Atylospora* are transferred to *Psathyra:*

Atylospora albipes = **Psathyra albipes**
Atylospora byssina = **Psathyra byssina**
Atylospora cinchonensis = **Psathyra cinchonensis**
Atylospora cubensis = **Psathyra cubensis**
Atylospora diminutiva = **Psathyra diminutiva**
Atylospora fuliginosa = **Psathyra fuliginosa**
Atylospora lateritia = **Psathyra lateritia**
Atylospora mammillata = **Psathyra mammillata**
Atylospora mexicana = **Psathyra mexicana**
Atylospora pallidispora = **Psathyra pallidispora**
Atylospora plana = **Psathyra plana**

New York Botanical Garden.